

# SRS Stored Material Surveillance Status

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# Agenda

- Non-3013 Container Surveillances
- 3013 Inner Container Surveillances

# Non-3013 Surveillances

- Various Techniques Utilized
  - Weight measurements
  - Can lid deflection
  - digital and film radiography
  - visual observations
  - filter tests
  - RADCON surveys
  - MC&A inspections

# Can Deflection Tool



# Non-3013 Surveillance Status

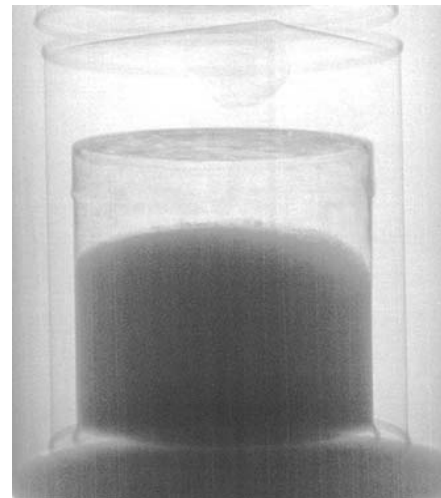
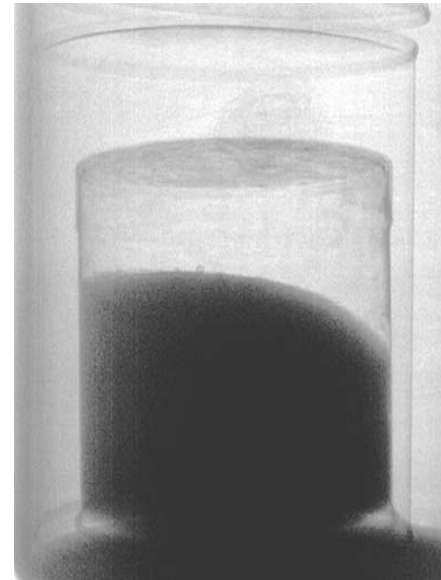
- Surveillances are tracked and compared to acceptance criteria
- Continue to be revised/updated as inventory or needs change
- All surveillances current and on-schedule
- Surveillances are meeting expectations

# Lid Deflection Surveillance Status

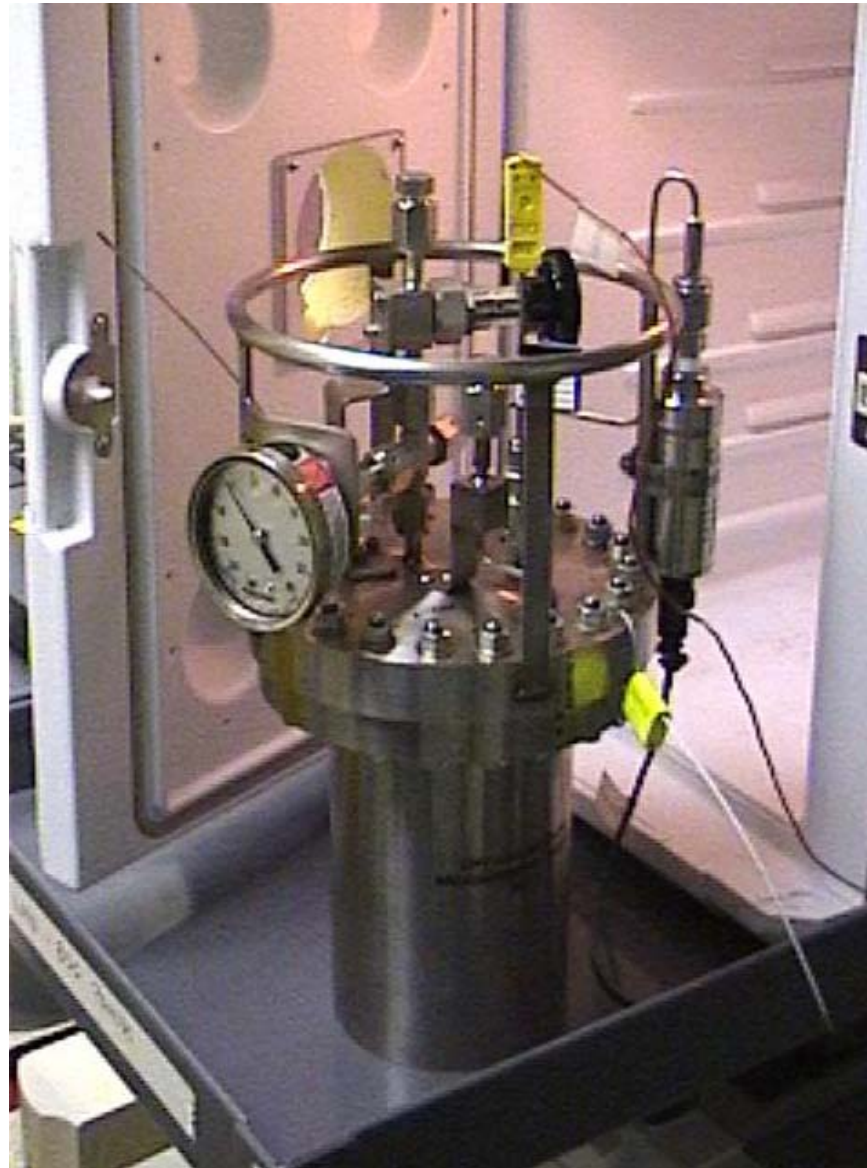
- 5 cans of offsite  $\text{PuO}_2$  repackaged in January because of inward lid deflection
- 3 cans of offsite  $\text{PuO}_2$  scheduled for repackaging in November because of inward lid deflection
- 2 cans of offsite Pu material repackaged because of outward lid deflection (pressurization)

# Repacking Pressurized Container 5228

- FG Pu/DU oxide from HUA-20
- Initially found in 1994 (lid deflection 0.023" above rim)
- Can sent to SRTC. Gas sample taken - 15psi, 40% H<sub>2</sub>, 6% O<sub>2</sub>, 14% CO<sub>2</sub>, 28% N<sub>2</sub>
- Extensive testing done at SRTC. Cause PVC decomp.
- Repackaged at SRTC sent to FBL in 1995
- Found pressurized in Sept 2002
- Punctured and repackaged into filtered can configuration
- SRTC repackaging glovebox w/o dry air
- Currently undergoing bell jar testing

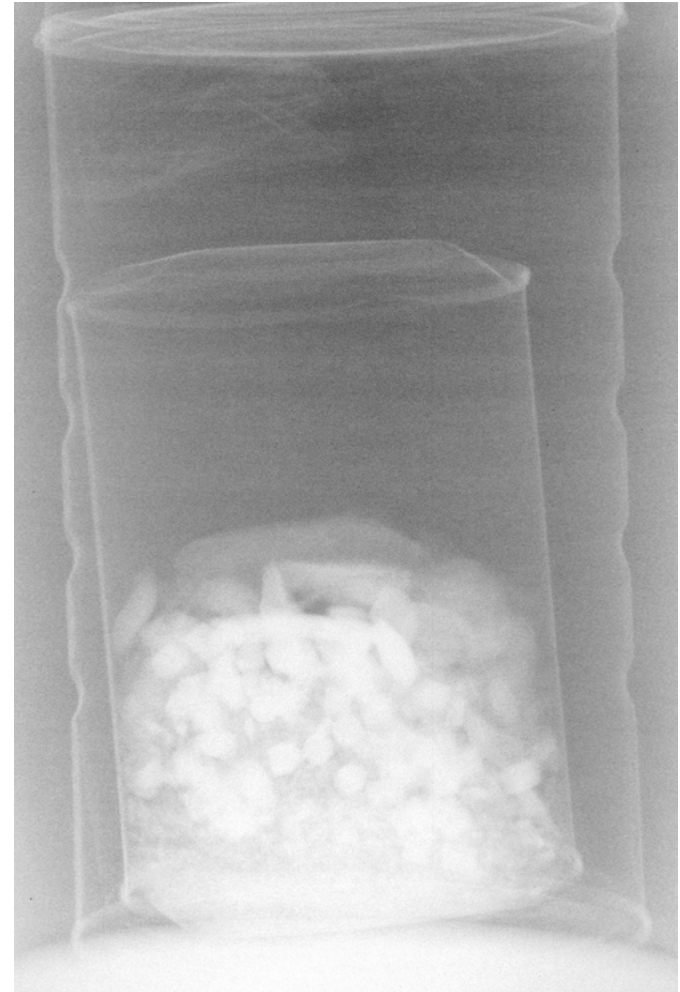


# Bell Jar



# Repacking Pressurized Container CZA96-179

- ANL-E WG Pu/EU/Fe alloy
- Material >20 mesh 45%Fe/33% Pu/13% EU pasivated alloy with minor amounts of Sn, Al, glass, C, Cl and O<sub>2</sub>.
- Received in 1975
- Discovered bulged in Dec-01 via drum radiography
- No contamination upon drum opening
- Punctured and repacked into filtered can configuration
  - No pyrophoric activity
  - Cans in good condition
  - Net weight matched shippper
  - sample sent to SRTC



# CZA96-179 Material Analysis

- SRTC analysis:
  - No metal present
  - $\text{FeCl}_2$ ,  $\text{FeCl}_3 \cdot 2\text{H}_2\text{O}$
  - $\text{PuO}_2$  &  $(\text{Pu}, \text{U})\text{O}_2$  solid soln.
  - 60% weight loss at 600C
  - Avg Cl = 22%
  - $\text{FeCl}_x$  very hygroscopic
  - $\text{Fe} < 45\%$
- Bell jar testing:
  - 2 month test
  - Gas generation at 0.025 psi/day or 0.13 psi/day/kg Pu
  - Gas sample after 1 month -  
6% $\text{H}_2$ , 13%  $\text{O}_2$ , 77% $\text{N}_2$ , 1.5%  $\text{CO}_2$



# CZA96-179A Sister Can

- Sister can to CZA96-179
- Material <20 mesh 45%Fe/33% Pu/13% EU pasivated alloy with minor amounts of Sn, Al, glass, C, Cl and O<sub>2</sub>.
- 1 month bell jar test
  - Material in original packaging
  - Gas generation rate = 0.045 psi/day or 0.13 psi/day/kg Pu
  - Gas sample after 2 weeks - 11%H<sub>2</sub>, 7% O<sub>2</sub>, 71%N<sub>2</sub>, 7% CO<sub>2</sub>
- Repackaged into filtered can configuration
  - Bag intact but black in color
  - Inner can significantly deteriorated (rusted)
  - Sample sent for lab analysis

# 3013 Inner Surveillance Status

- Currently only have Pu metal in bagless transfer cans (BTCs)
  - FBL buttons, Barter metal, Hanford buttons, RFETS classified metal
- Surveillances
  - weight measurements
  - lid deflection measurements
  - baseline, 6 month, 24 month, 5 years, every 5 years

# Surveillance Specifics

- Weight measurements
  - Acceptance limit = 0.6g weight gain
  - Based on scale uncertainty
- Lid deflection measurements
  - Acceptance limit = 0.005” outward displacement
  - Based on 1/2 deflection at 100 psig

# Surveillance Impactors

- 1999 Vault decontamination efforts
  - Removed and replaced burr covers on all BTCs
    - Weight impact of +/- 6 g
  - Removed TID seals from BTCs
    - deflection impact of up to -0.01”
    - Weight impact of up to -1.5g
  - Total surveillance impact
    - Additional weight uncertainty of +4.5/-7.5g
    - Additional lid measurement uncertainty of +0/-0.1”

# Surveillance Results

- Weight gain
  - 1 container above limit (0.8g weight gain)
  - RCO surveys show can is clean
  - follow-up measurements planned
  - Radiography to be done
- Lid deflection
  - 10 containers above limit
    - No trends in pressure
    - 8 are explainable
    - 2 need further investigation
  - 76 containers with negative deflection
    - Range up to -0.03” deflection
    - No trends observed